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(54) Title: INPUT/OUTPUT (I/O) SCANNER FOR A CONTROL SYSTEM WITH PEER DETERMINATION

(57) Abstract: A method and apparatus for providing an active standby control system comprising the steps of providing a first and second programmable logic controller (PLC), each controller having an operating state. Each controller further including a network module board operably connected to a network; a control unit, a remote I/O head; and, a hot standby module, each hot standby module is operably connected together. Operably connecting each programmable logic controller to a network. Assigning a network address identifier, i.e., Internet Protocol or Media Access Control address, to each programmable logic controller and sensing the operating state of each programmable logic controller. The network address identifier of each programmable logic controller is determined by the operating state of each respective programmable logic controller. The present invention is also directed to an apparatus for communication with at least one device which resides on a standard communications network using a standard communications protocol. The apparatus has a scanner for scanning the device, a device scan table for storing data relating to the device, and a standard communications interface for interfacing between the device scanner and the standard communications network using the standard communication protocol. The present invention is also directed to a device scanner for a first device located on a first node of a standard communications network. The device scanner is provided for scanning devices on the standard communications network, and for identifying a second device on a second node of the standard communications network. The device scanner has an initiator for initiating a first communications command in a peer protocol format to the second node, a receptor for receiving from the second node a second communications command in the peer protocol format, in response to the first communications command, and an identifier for identifying the second device on the second node as a peer device. This apparatus and device can be used within a control system for monitoring input devices and for controlling output devices which reside on the standard communications network. The standard communications network can be an Ethernet network, and the standard communications protocol used therein can TCP using Modbus.

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INTERNATIONAL SEARCH REPORT

Int'l	Application No
PCT/US 03/05942	

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 0041377	A 13-07-2000	US	6327511 B1	04-12-2001
		CA	2320254 A1	13-07-2000
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US 5245704	A 14-09-1993	NONE		

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A. CLASSIFICATION OF SUBJECT MATTER			
IPC 7	H04L29/06	G05B19/418	H04L12/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L G05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 41377 A (SCHNEIDER AUTOMATION INC) 13 July 2000 (2000-07-13) the whole document -----	1-38
X	US 5 245 704 A (WEBER MARK S ET AL) 14 September 1993 (1993-09-14) column 4, line 27 - line 46 column 13, line 63 -column 14, line 56; claims 6-8 -----	1-3, 5-7, 15-17, 19-38

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax (+31-70) 340-3016	Authorized officer Paven, A